

Application No. 10/084,962
Response to Office Action
Dated July 14, 2005
January 13, 2006

CURRENT LISTING OF CLAIMS

This listing of claims represents the claims as they are presently pending. This amendment does not include any changes to the claims.

Claims 1-16 (Canceled)

17. (Previously Presented) A system for electroplating a layer of material on a semiconductor wafer, said system comprising:

an electrochemical cell, said electrochemical cell comprising a primary anode, a cathode contact, and a chamber, said primary anode and said cathode contact disposed within said chamber;

at least one secondary anode, said secondary anode for providing a variable current to said semiconductor wafer;

a metallic solution, said metallic solution disposed within said electrochemical cell; and

a power source, said power source coupled to said primary anode, to said at least one said secondary anode and to said cathode contact, said power source capable of producing said variable current by providing varying levels of voltage to said primary anode and to said secondary anode.

18. (Previously Presented) The system as recited in claim 17 wherein said at least one secondary anode is a ring shaped anode.

Application No. 10/084,962
Response to Office Action
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January 13, 2006

19. (Previously Presented) The system as recited in claim 17 wherein said at least one secondary anode is comprised of a first secondary anode and a secondary anode.

20. (Previously Presented) The system as recited in claim 19 wherein said first secondary anode and said second secondary anode are comprised of a first concentric ring and a second concentric ring.

21. (Previously Presented) The system as recited in claim 17 further comprising:

a semiconductor wafer, said semiconductor wafer coupled to said cathode contact, said semiconductor wafer acting as a cathode and thereby receiving an electroplated film on its surface.

22. (Previously Presented) The system recited in claim 17 wherein said at least one secondary anode is disposed within said chamber of said electrochemical cell.

23. (Previously Presented) The system recited in claim 17 wherein said metallic solution is a copper solution.

24. (Previously Presented) The system recited in claim 17 wherein said power source provides said variable electrical current as a function of respect to elapsed time of said electroplating operation.

Application No. 10/084,962
Response to Office Action
Dated July 14, 2005
January 13, 2006

25. (Previously Presented) The system recited in claim 17 wherein said power source provides said variable electrical current as a function of physical location of application of said variable electrical current to said semiconductor wafer.

26. (Previously Presented) The system recited in claim 17 wherein said power source provides said variable electrical current as a function of respect to a voltage that exists at discrete locations on said semiconductor wafer being electroplated.

27. (Previously Presented) The system recited in claim 17 wherein said power source provides said variable electrical current as a function of variation in a profile of said primary anode and at least said at least one secondary anode used in said electroplating operation.

28. (Previously Presented) The system recited in claim 17 wherein said power source provides said variable electrical current as a function of an influence of said chamber of said electrochemical cell on a theoretically uniform electric field.

29. (Previously Presented) The system recited in claim 17 wherein said power source provides aid variable electrical current as a function of a thickness of said layer of material electroplated onto said semiconductor wafer.

30. (Previously Presented) The system recited in claim 17 wherein said power source provides a lower current value at an outer portion of said

Application No. 10/084,962
Response to Office Action
Dated July 14, 2005
January 13, 2006

semiconductor wafer and wherein said power source provides a higher current value at an inner portion of said semiconductor wafer.

31. (Previously Presented) The system recited in claim 17 wherein said power source provides said variable electrical current by providing a variable voltage across said primary anode with respect to said at least one secondary anode.

32. (Previously Presented) An anode system for performing an electroplating operation, said anode system comprising:

a plurality of anodes, said plurality of anodes for performing an electroplating operation on a part, said plurality of anodes insulatively coupled together, said electroplating operation controlled by providing a variable current on said plurality of anodes via varying levels of voltage; and

a plurality of leads, each of said plurality of leads respectively coupled to one of said plurality of anodes, each of said plurality of leads insulatively coupled to any other said plurality of leads such that each of said plurality of leads has the capability of providing an independent electrical current from a power source to its respective one said plurality of anodes.

33. (Previously Presented) The anode system recited in claim 32 wherein at least one of said plurality of anodes is a ring-shaped anode.

Application No. 10/084,962

Response to Office Action

Dated July 14, 2005

January 13, 2006

34. (Previously Presented) The anode system recited in claim 32 wherein at least one of said plurality of anodes is disposed annularly within at least another of said plurality of anodes.